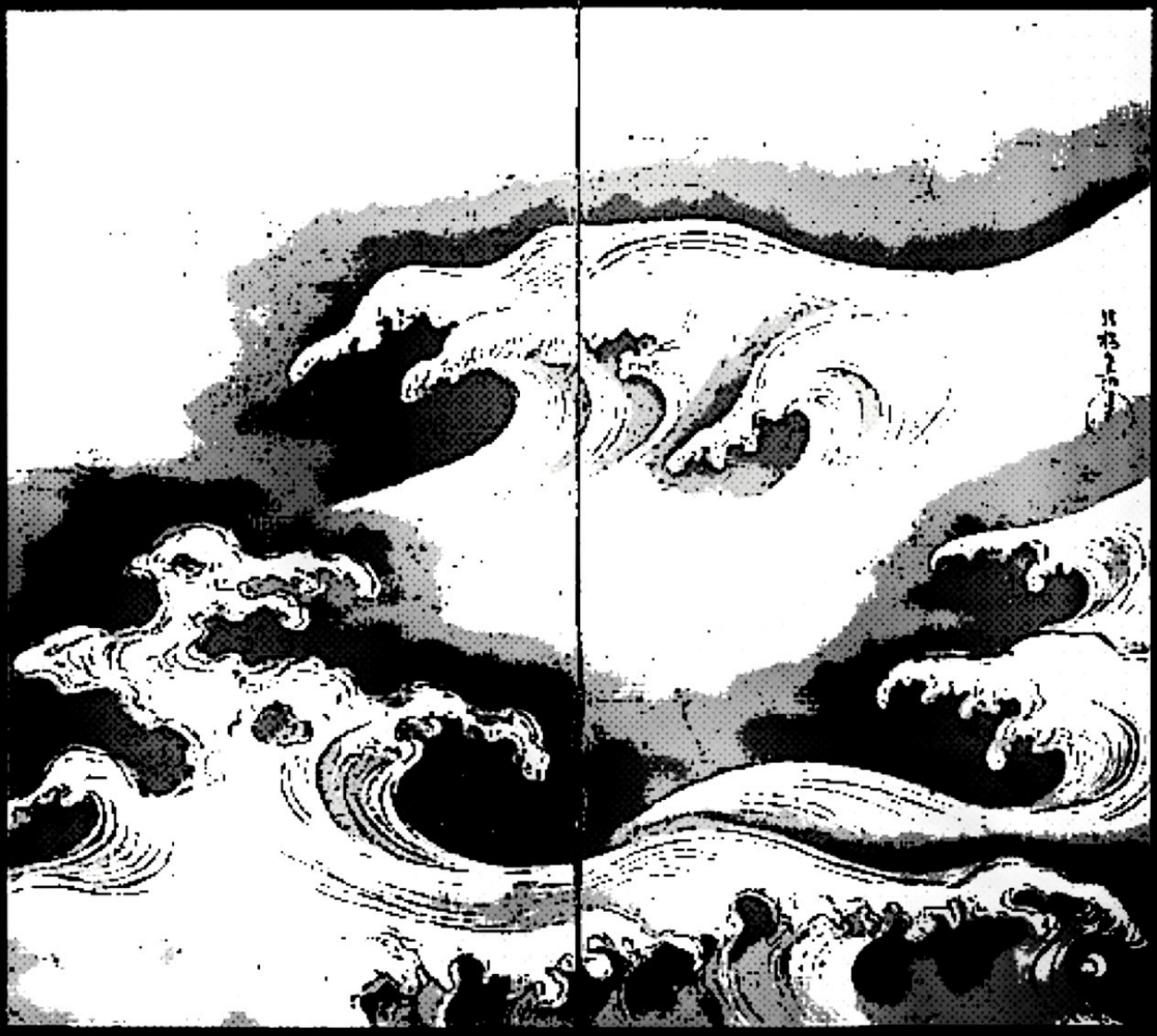

Agency, Coercion, and Consent in the First Ocean Crossings

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Abstract

Archaeological debates about the first ocean crossings are often compressed into a choice between accidental drift and intentional colonization. Yet "intentional" can refer to different actors, stages, objects, and outcomes. A craft may be deliberately built, embarkation deliberately compelled, movement actively managed, and landfall vigorously pursued even when the passengers never chose to leave and no actor initially intended the destination ultimately reached. This essay proposes an actor-by-stage model of maritime agency. For each coalition at each stage, it distinguishes desired outcomes, foreseen outcomes, knowledge, control, and embarkation voluntariness. It then develops coercive departure as a family of candidate regimes—including punitive abandonment, non-destination exile, ordeal, and, as a limiting case, death-directed sacrificial dispatch. Coercion also changes the passenger's risk baseline: extreme danger at sea may be instrumentally rational when the expected alternative ashore is worse. The proposal is not a claim that any particular Pleistocene settlement began in coercion. It is a model-completeness argument: a documented or anthropologically coherent causal structure should be included when it is compatible with material constraints, changes relevant parameters, and is not already represented by existing scenarios. The framework also separates landfall, locally viable settlement, and continent-scale peopling. The archaeological record may establish impressive maritime capacity and a durable demographic outcome while leaving the initiating distribution of agency radically underdetermined. The sea may preserve the fact of arrival. It does not preserve consent.

The Raft That Was Not Supposed to Arrive

Imagine a shoreline in deep prehistory.

A community selects a raft or small craft already used for coastal work. Perhaps it is old, repairable, and still capable of floating. Food is placed aboard—enough for an ordeal, a symbolic release, or a journey whose end the senders do not wish to supervise. A household is ordered onto it. Some obey because refusal would bring immediate violence. Some may accept the judgment. One may be bound. Another may be a competent paddler. The craft is pushed through the surf and released beyond the reef.

Those on shore do not necessarily intend a shipwreck. Their first objective may be simpler: absence. They may want a rival family gone, an offender removed, a captive disposed of, a dangerous person placed outside the moral boundary of the group, or a dispute transferred to wind, current, fate, or a deity. Death may be foreseen without being the sole desired result. In the darkest limiting case, death is the point: the craft is vehicle and altar, and survival would defeat the rite.

The craft drifts beyond immediate reach. Control changes.

The people aboard do not become master navigators in an afternoon. They cannot invent a sail, reverse a major current, or acquire years of embodied ocean knowledge while thirsty and afraid. But control is not all-or-nothing. They can shift weight, bail, preserve lashings, use a pole, paddle, or loose board already aboard, and aim toward visible land, birds returning at dusk, cloud formations, floating vegetation, or a break in the horizon. A passenger from a maritime community may possess ordinary coastal knowledge even if no one aboard expected an open-water journey. A mixed group may contain one person who can read weather or swell. Survival can become intentional before navigation becomes expert.

Then land appears.

What kind of voyage was this?

It was deliberate as removal. It was involuntary for at least some passengers. It may have been technically purposeful without being geographically targeted. Once land became perceptible, reaching it could become a shared goal. The particular landfall might still be unintended by every actor at the moment of launch. If the group found water and remained, a migration would have begun as an expulsion.

No archaeological evidence presently shows that this exact sequence produced a Pleistocene settlement in Wallacea or Sahul. That boundary is essential. The story is a diagnostic instrument, not a disguised historical claim. It reveals that “Was the voyage intended?” is underspecified.

The better question is: **Who intended what, when—and who could refuse?**

What the Evidence Can Establish

Recent evidence has made early seafaring in Island Southeast Asia harder to dismiss and easier to sensationalize. Traces of plant working in Late Pleistocene Wallacea have been used to argue that fibre extraction, cordage, bindings, nets, and related plant technologies belong near the center of any reconstruction of early watercraft. The case is indirect by necessity. Pleistocene vessels made from wood, bamboo, reeds, palms, or fibre rarely survive. Archaeologists therefore work from stone-tool use-wear and residues, faunal remains, geography, oceanography, experiments, and the unavoidable fact that people reached islands that could not be reached on foot (Fuentes and Pawlik 2025).

Other evidence enlarges the technical picture. Fish remains from Asitau Kuru in Timor-Leste have been interpreted as evidence of pelagic fishing by about 42,000 years ago (O’Connor, Ono, and Clarkson 2011). Experiments in East Asia first exposed the poor performance of

simple bamboo rafts in demanding currents and later demonstrated that a non-sailing dugout canoe could be made with Upper Palaeolithic tools and used to cross more than one hundred kilometres of the Kuroshio corridor (Kaifu et al. 2019, 2025). Numerical work published alongside that experiment explored the departure conditions needed for such a crossing (Chang et al. 2025). Oceanographic and demographic models show that even modest control over timing and direction can transform arrival probabilities. Genetic and archaeological evidence continues to support a deep chronology for the peopling of Sahul, although dates, routes, and the relation between first landfall and durable population growth remain contested (Bird et al. 2019; Gandini et al. 2025).

These findings justify strong claims about capacity. Early people in the region could acquire maritime knowledge, work plant materials, construct useful vessels, exploit offshore resources, and make crossings that demanded judgment and cooperation. But capacity is not motive. A seaworthy craft proves that somebody could build or maintain it. It does not prove that everyone aboard chose the departure. A launch timed to favorable conditions indicates knowledge somewhere in the social system. It does not identify the purpose for which that knowledge was used. A settlement proves that people arrived and persisted. It does not, by itself, recover the initiating social cause.

The evidentiary ladder matters:

- Material traces can support an inference of **technical capacity**.
- Route and drift models can compare the **physical plausibility** of trajectories.
- Demographic models can estimate the conditions for **persistence**.
- None of those results alone identifies the **distribution of consent, control, or purpose** among the people involved.

This essay therefore moves among four evidentiary levels that must remain distinct: Pleistocene crossings; later traditions such as Mentawai founding narratives; historical and ethnographic comparisons; and conceptual scenarios used to test model completeness. Later evidence can establish that humans have organized voyages in a certain way. It cannot prove that the same organization caused an earlier crossing.

The Binary Has Already Begun to Break

The contrast between accidental drift and intentional voyaging has done valuable work. It forced researchers to calculate currents, visibility, journey duration, propulsion, departure windows, and founding population size. Bird and colleagues gave the issue its clearest formulation in the title of a 2019 article: “Early Human Settlement of Sahul Was Not an Accident.” Under their assumptions, purely random arrival is difficult to reconcile with

durable settlement. Selected departure times and directional effort make success far more likely.

That conclusion is powerful, but its scope must be specified. “Not an accident” does not entail “a consensual expedition to colonize a known continent.” Allen and O’Connell had already argued that the settlement of Sahul could emerge from many local decisions without a continent-scale colonizing intention. Anderson identified exile as a recurrent motive in later maritime migration. Farr and colleagues now divide voyages into stages—planning, construction, preparation, travel, and recollection—and explicitly note that not everyone who goes to sea chooses to do so. Archaeologists of small-scale seafaring increasingly treat the water as a political, symbolic, and inhabited world rather than a neutral surface beneath a boat (Allen and O’Connell 2008; Anderson 2006; Farr et al. 2025; García-Piquer, Fauvelle, and Grier 2025).

The novelty claimed here is therefore modest and specific. It is not the discovery that coercion exists, that exile can move people, or that voyages have stages. It is the formal combination of four requirements:

1. Intentionality must be indexed to **actor and stage**.
2. An actor’s **desired outcome** must be distinguished from an outcome merely foreseen.
3. Social agency must be separated from the **physical and demographic state** of the crossing.
4. Actors’ objectives may be **adversarial**, so one coalition’s success can be another’s defeat.

Without those distinctions, one positive inference can spread too far. Purposeful construction becomes purposeful embarkation; purposeful embarkation becomes shared consent; some directional control becomes a known destination; and eventual settlement becomes an original colonizing plan. The binary is not wrong because accidents never happen or because planned colonization never occurs. It is incomplete because these are not the only available causal structures.

A departure can be socially deliberate and geographically open.

A Voyage Is a Sequence of Contested Acts

A voyage is not one action. At minimum it contains construction or selection of a craft, provisioning, embarkation, launch, movement, landfall, settlement, and possible return. Different coalitions may dominate different stages: builders, household heads, a council, ritual authorities, guards, navigators, passengers, survivors, and descendants. Coalitions can overlap, fracture, or change.

This matters because intention, knowledge, control, and voluntariness are not synonyms.

Intention concerns an outcome an actor aims to bring about. **Foresight** concerns an outcome the actor expects or accepts without necessarily seeking it. **Knowledge** concerns what the actor understands about technology, weather, routes, or destinations. **Control** concerns the actor's practical ability to alter the event. **Embarkation voluntariness** concerns whether a person had a meaningful opportunity to refuse departure without threats, violence, confinement, or penalties so severe that "choice" becomes misleading.

That last definition is descriptive, not a claim that prehistoric communities held modern legal doctrines of autonomy or contract. A person might freely assent, accept a constrained choice, internalize a collective obligation, submit under threat, be physically compelled, or occupy an ambiguous mixture of these positions. A ritual command can be sincerely believed and socially coercive at the same time. The categories name observable differences in causal structure; they do not presume a modern theory of rights.

The same event can change its profile as it unfolds. People may consent to a fishing trip but not to the storm drift that follows. Fugitives may choose departure under extreme pressure, which is neither leisurely preference nor physical compulsion. Exiles may be passive at embarkation and purposeful at sea. A navigator may cooperate while other passengers resist. Forced resettlement may have a destination chosen by senders; punitive maritime abandonment may deliberately have none. Sacrificial participation may be volunteered, compelled, or institutionally ambiguous rather than involuntary by definition.

Stage	Question	Possible sender position	Possible passenger position
Craft and provisions	Who selects the technology and cargo?	Choose an old, disposable, or adequate craft; provision an ordeal or one-way removal	No control, partial input, or covert preparation
Embarkation	Could each person meaningfully refuse?	Order, threaten, persuade, restrain, or permit volunteers	Free assent, constrained acceptance, internalized duty, resistance, or compulsion
Launch	What absence or arrival is sought?	Removal, exposure, destination-specific relocation, ritual transfer, or death	Departure sought, tolerated, or opposed
Movement	Who can alter heading, speed, or survival?	Direct, tow, escort, release, sabotage, or relinquish control	Bail, paddle, shift weight, follow signs, seize control, or remain unable to act
Landfall	When does a destination become an aim?	May be irrelevant, acceptable, forbidden, or unknown	A particular shore, any visible land, or mere survival may become intentional
Settlement and return	What counts as success?	Absence, deterrence, death, relocation, or eventual reconciliation	Immediate survival, local persistence, onward movement, return, or retaliation

The table is not a taxonomy into which every voyage must fit. It is a discipline against transferring one actor's purpose across the whole chain. It also clarifies a crucial phrase: when this essay says that "nobody intended the landfall," it means that no relevant actor intended **that particular destination at launch**. Once signs of land appeared, passengers could intentionally seek it. Later intention does not retroactively create earlier knowledge.

The Coercive-Departure Family

"Coercive launch" is best treated not as a single mechanism but as a family of departure regimes. Their common feature is asymmetry at embarkation: at least some passengers lack a meaningful ability to refuse, while another actor deliberately causes or controls departure. Their goals may differ sharply.

Destination-specific forced resettlement. Senders intend both removal from one place and arrival at another. The journey is coerced, but the destination is not open. Historical deportations belong here, although such state-administered examples should not be projected wholesale into the Pleistocene.

Non-destination exile. Senders intend exclusion from the home community but leave the endpoint unspecified. The political product is absence. Landfall elsewhere may be tolerated, irrelevant, or outside practical concern.

Punitive abandonment. Exposure to danger is part of the penalty. Death may be foreseen, and perhaps desired, but the immediate act is withdrawal of protection rather than an engineered certainty of death.

Ordeal or divine judgment. The launch transfers decision to a nonhuman power, fate, weather, or the moralized sea. Survival may be interpreted as acquittal, transformation, or proof. The craft must remain viable enough for the ordeal to have meaning.

Death-directed sacrificial dispatch. The intended outcome is death or irreversible transfer to a supernatural recipient. Safe return or landfall defeats the senders' purpose. This is the clearest adversarial case and the least prudent candidate to generalize into egalitarian Pleistocene societies.

These regimes deserve different priors. Exclusion and collective punishment do not require a state. Wrangham's comparative and evolutionary synthesis argues that small-scale, acephalous communities can sometimes coordinate severe sanctions, including targeted killing, without a centralized penal apparatus, although the prevalence of such practices in the Pleistocene remains unknown (Wrangham 2021). The minimum institutional package is not a prison, guard corps, dedicated shipyard, or penal bureaucracy. It is a coalition able to

compel embarkation and control a pre-existing craft long enough to release it. A household, temporary coalition, or community assembly could in principle meet that threshold. By contrast, a dedicated sacrificial expedition with specialized construction, guards, elaborate ceremony, and status-differentiated victims would imply more durable coordination and perhaps hierarchy.

That hierarchy cannot simply be assumed. In a phylogenetic study of ninety-three later Austronesian cultures, Watts and colleagues found that human sacrifice helped stabilize stratification once stratification had arisen and promoted transitions toward inherited class systems. The result makes sacrifice anthropologically relevant while warning against its casual projection into unknown Pleistocene social formations. It supports a conditional proposition—some stratified Austronesian societies linked ritual killing and power—not a timeless regional essence (Watts et al. 2016).

The evolutionary objection also needs care. Expelling healthy relatives can reduce inclusive fitness, but a band is not a single fitness-maximizing organism. Contemporary forager residential groups commonly include many unrelated adults; kinship, residence, marriage, alliance, conflict, and mobility do not collapse into one coefficient of relatedness (Hill et al. 2011). People may miscalculate, prioritize immediate safety, punish defectors, remove competitors, or act through cultural institutions whose local incentives do not maximize long-term group survival. The high cost of exile should lower its prior frequency and shape passenger selection. It does not make expulsion impossible.

Why Let the Craft Float?

The strongest strategic objection is straightforward: if senders want people dead, why hand them a seaworthy craft? Execution is more reliable. A sabotaged vessel reduces the chance of return. Releasing enemies with propulsion, provisions, and maritime expertise can create a retaliation vector.

That objection is decisive against one careless version of the model: a sender who seeks certain death, possesses cheaper reliable means, and nevertheless provides expert navigators with a first-rate, fully equipped vessel. A plausible analysis should not rescue that scenario with atmosphere. It should change the parameters or reject it.

But coercive departure does not always optimize death. Sender payoffs can include removal, avoidance of direct bloodguilt, spectacle, deterrence, ritual legitimacy, factional compromise, or the transfer of responsibility to the sea. A functioning craft can be necessary to pass reefs, move the condemned beyond easy return, satisfy an ordeal, or make disappearance publicly intelligible. It may be an existing coastal craft rather than a vessel specially built for

punishment. It may be old, stripped of its best propulsion, released in marginal weather, or provisioned only enough to make the act something other than immediate drowning. The relevant economic variable is opportunity cost, not original construction cost alone: a community might relinquish a depreciated, damaged, stripped, or strategically burdensome craft whose remaining value was lower than the expected value of removal.

Return risk is also a separate variable, not a refutation by definition. A capable craft does not guarantee control against wind and current. Shore defenders may judge return unlikely, seasonal conditions may carry the craft away, the exiles may lack allies, and home may be inaccessible even if landfall occurs elsewhere. Conversely, where an easy hostile return is available, punitive maritime abandonment becomes less plausible. Models should explicitly compare the sender's alternatives and calculate the probability and cost of return.

The strategic questions are therefore empirical:

- What outcome does the sender value: death, absence, ordeal, destination-specific relocation, or public deterrence?
- What other sanctions are available, and at what social cost?
- How capable is the selected craft, and who possesses navigational knowledge?
- Can passengers reverse course, recruit allies, or retaliate?
- Does the launch transfer responsibility in a way that direct killing would not?

Coercive departure is strongest where these answers form a coherent payoff structure. It should not be used as a universal solvent for unexplained landfalls.

When the Shore Is Worse Than the Sea

Coercion changes the baseline against which passenger risk must be judged. A departure that appears irrational when compared with ordinary life ashore may be instrumentally rational when remaining means near-certain execution, recapture, targeted violence, or some other outcome the passenger regards as worse. The relevant comparison is not danger against safety. It is the expected value of going to sea, given the passenger's beliefs, against the expected value of staying.

$$\mathrm{EU}(\text{sea} \mid \text{passenger beliefs}) > \mathrm{EU}(\text{stay} \mid \text{passenger beliefs})$$

If shore-based survival is effectively zero and the sea offers even a small credible chance of survival, flight can satisfy that inequality despite extreme maritime danger. The numerical contrast—one chance in a hundred at sea versus none on shore—is an illustration, not an archaeological estimate. Nor should "social death" automatically be treated as biological death: exile, loss of status, capture, and execution carry different costs and leave different options.

This argument applies most clearly to fugitives, escapees, and passengers who retain some choice about whether to flee or how to act after release. It does not transform a person physically forced aboard into a voluntary explorer. Rational survival action after coercion does not retroactively confer consent on the launch. The horizon need not promise land; it need only be preferable to the shore.

From Labels to an Actor-by-Stage Model

A single voyage label hides the variables that matter. Let each relevant actor or coalition be **a**, and each stage be **s**. Represent the social profile as:

$$\Theta_{a,s} = (I, F, K, C, W)$$

Here **I** records desired outcomes; **F**, foreseen but not necessarily desired outcomes; **K**, relevant knowledge; **C**, practical control; and **W**, voluntariness or capacity to refuse. The point is not to assign spurious numbers to unknowable mental states. It is to prevent an inference about one component from silently filling all the others.

Keep the physical state separate:

$$X = (\text{craft, cargo, current, wind, visibility, distance, duration})$$

And keep the demographic state separate again:

$$D = (\text{number, age, sex, kinship, health, fertility, later contact})$$

This architecture permits precise comparisons. Two scenarios may share the same craft and current while differing in passenger selection and control. Two launches may be equally deliberate while differing in destination knowledge. A coercive group may be technically capable but demographically fragile. A voluntary group may be well balanced but still miss its target. Social profiles affect physical and demographic inputs without becoming reducible to them.

The launch-to-movement transition makes the actor indexing concrete. In an unescorted coercive release, sender control over departure may initially exceed passenger control:

$$C(\text{sender, launch}) > C(\text{passenger, launch})$$

After release, the sender's direct control over movement may approach zero while passenger control may increase:

$$C(\text{sender, movement}) \to 0;\ C(\text{passenger, movement}) \text{ may rise above } 0$$

The second term is contingent, not automatic. Bound, injured, propulsionless, or inexperienced passengers may remain unable to affect heading. Control is also multidimensional: release, propulsion, steering, repair, provisioning, and survival need not

pass between actors at the same moment. The notation disciplines the description; it does not turn fragmentary evidence into measurable mental states.

A scenario should earn a place in a model only when it passes four tests:

1. **Analogue:** a documented, historically reported, or anthropologically coherent analogue establishes that the causal structure is humanly possible.
2. **Compatibility:** the scenario does not contradict the route, technology, chronology, or social scale independently supported for the case.
3. **Parameter consequence:** it changes at least one modeled input—departure timing, group composition, provisioning, offshore release, control, repetition rate, or return probability.
4. **Nonredundancy:** its consequences are not already captured by an existing drift, exploration, or colonization regime.

Passing these tests does not establish historical truth. It establishes eligibility for comparison. A candidate model can then lose because it requires implausible institutions, produces poor demographic outcomes, or fails sensitivity analysis. This is what makes the framework falsifiable in the useful sense: not because a binding rope will reliably fossilize, but because explicit scenario families generate different parameter combinations whose fit and robustness can be compared.

Landfall Is Not Peopling

The word “colonization” often collapses three outcomes that require different evidence.

Landfall means that one or more people reach a shore. A single coerced departure, drift event, or escape can in principle produce it.

Locally viable settlement means that a group persists and reproduces at that destination for some meaningful period. Group size, sex and age structure, health, skills, resources, and chance become more demanding.

Regional or continent-scale peopling means durable demographic expansion, usually involving repeated arrivals, movement among sites, population growth, and connections across generations.

This distinction sharply limits what coercive departure can explain. It is a plausible candidate for an isolated landfall and, under favorable demographic circumstances, a small founding population. It is not by itself a persuasive account of the durable peopling of Sahul. Bird and colleagues found that the probability of random arrival remained below five percent unless groups of at least forty adults were washed off an island at least once every twenty years. Selecting departure conditions and maintaining minimal directional headway

greatly increased success, supporting repeated, coordinated voyaging rather than one lucky raft (Bird et al. 2019). In a companion demographic analysis, Bradshaw and colleagues estimated that a census founding population of roughly 1,300 to 1,550 people was required to keep quasi-extinction risk below the threshold they modeled; the total could have arrived at once or through multiple voyages of at least 130 people over approximately 700 to 900 years (Bradshaw et al. 2019). Some northern crossings may have taken only two or three days and involved intervisible islands, yet the cumulative settlement process demanded much more than a single arrival.

This does not render coercion irrelevant. Repeated migration systems can mix motives. A coerced or fugitive landfall can become a path-opening event—but only if it creates a transmission channel. A return voyage, rescue attempt, visible foothold, kin search, or later encounter could convert an unplanned destination into known geography. Without feedback, the information barrier remains intact: one invisible survival does not guide the next departure. With feedback or a contactable bridgehead, coercion can supply a spark that later voluntary, exchange-based, kin-tracking, or coordinated voyages turn into demographic fuel. Forced movement could also occur within a broader network of planned voyaging. But the explanatory burden rises with the scale of the outcome. The farther the claim moves from “someone arrived” toward “a region was permanently peopled,” the more it must account for repetition, information flow, demographic rescue, and social coordination.

The appropriate claim is therefore asymmetrical: coercive departure widens the model space for particular voyages and early landfalls more than it replaces the coordinated-voyaging account of Sahul’s durable peopling.

The Retrospective Purpose Error

Archaeology encounters a voyage from its far end. There is a site, a hearth, a genome, a changed food web, or descendants. Because the terminal outcome is settlement, departure is easily narrated as a settlement project.

Call this the **Retrospective Purpose Error**: inferring what an event was for solely from what its survivors eventually accomplished.

The phrase names a familiar mixture of teleological inference and survivorship bias; it is not a new logical fallacy offered for patent. Its value is diagnostic. A settlement establishes that settlement occurred. It does not identify when settlement became a goal. People who never intended to leave may intentionally seek any land once at sea. People who intended only to escape may decide after arrival to remain. A second voyage may be planned after a first,

unplanned landfall. Descendants may transform an involuntary arrival into a charter of origin without preserving the launchers' purpose.

Failure also filters the archive. Voyages that disappear at sea leave little evidence. Landfalls that end after days may be archaeologically invisible. Persistent communities create tools, burials, stories, genes, and the appearance that their beginning pointed toward them all along. The record is therefore selected by survival before archaeologists ever sample it.

The correction is strict but modest: terminal outcomes are direct evidence about terminal outcomes. They become evidence about initiating purpose only when joined to independent indicators of planning, destination knowledge, group selection, repeated traffic, or control at departure.

Exile as Subtractive Founding

Exile is usually described from the perspective of the society that expels: a person is subtracted from the community. Viewed from the receiving shore, the same act may become founding. The event can be politically subtractive at one end and demographically additive at the other.

Anderson's historical and legendary cases show why exile belongs in the comparative repertoire of island archaeology. But oral traditions are not transparent records of deep time, and their variants often resist a single causal reading. Juniator Tulius's study of Mentawai origin narratives is especially instructive. In one recorded version, a community condemns a woman and her father sets her adrift on two sago palms. In another, the woman constructs a bamboo-and-wood raft and deliberately travels toward visible Siberut. These are not interchangeable details. One profile emphasizes compelled exposure; the other gives the traveler more knowledge and control. The variation is itself evidence that founding narratives redistribute agency as they are told (Tulius 2012).

Such narratives can do three legitimate kinds of work. They can show that maritime communities have imagined or remembered founding through rejection, abandonment, shipwreck, pursuit, or shame. They can supply causal structures that modelers might otherwise omit. And they can warn that social memory is not a neutral logbook: it moralizes origin, legitimizes groups, and changes with performance.

What they cannot do is bridge tens of thousands of years by resemblance alone. The Mentawai material does not prove a Pleistocene exile. It establishes that "deliberate launch without shared colonizing intent" is not conceptually incoherent and that even one tradition may contain multiple actor-stage profiles.

The Offering That Escaped

Sacrificial dispatch is best retained as a limit case because it exposes adversarial purpose with unusual clarity. If senders intend an offering to die or pass irreversibly into a sacred domain, while passengers intend to survive, there is no single intention belonging to "the voyage." Ritual success and demographic success point in opposite directions.

That conceptual clarity is also a temptation. Sacrifice is vivid, narratively magnetic, and empirically difficult to diagnose. The framework would become weaker if the most cinematic case swallowed more ordinary mechanisms of forced movement. Punitive abandonment, exile, captive disposal, and ordeal require fewer assumptions and often deserve higher prior probability. Nor should later Austronesian evidence for ritual killing be transformed into a Pleistocene regional constant. Watts and colleagues' association between sacrifice and stratification is a warning that some sacrificial systems presuppose social formations for which the deep record provides no evidence.

Even where ritual dispatch occurred, participation need not be uniformly coerced. A person can volunteer, accept a role under internalized obligation, face a constrained choice, or be physically forced. "Sacrificial" identifies the organizers' interpretation of the act; it does not settle every participant's mental state.

The limit case remains valuable because it forces a clean question: what counts as success, and for whom? A craft can succeed materially by remaining afloat, fail ritually because its passengers live, succeed for passengers through landfall, and later succeed demographically through reproduction. No single verdict—intentional, accidental, successful, failed—captures the whole sequence.

What the Record Could—and Could Not—See

The most serious empirical challenge is equifinality: different histories can produce similar traces. Trauma in an early burial may reflect coercion, interpersonal violence after arrival, an accident, or later conflict. An unusual age or sex distribution may reflect social selection, a specialized voluntary expedition, transit mortality, sampling error, or a second wave of migration. Ceremonial objects in a burial may have been deposited years after landfall and cannot automatically be treated as voyage cargo. Scarcity of practical equipment may reflect lethal abandonment, organic decay, short occupation, or excavation bias.

For that reason, there is no proposed "coercion signature." Individual observations should be treated as likelihood modifiers inside a comparative model, not as diagnostic tokens. Stronger inference would require conjunctions: demographic anomalies aligned with route feasibility, provisioning patterns, evidence of one-way movement, lack of return traffic,

trauma chronology, genetic discontinuity, or oral-historical structures from much later but locally relevant contexts. Even then, conclusions should remain probabilistic.

Preservation sets a hard ceiling. The first ancient human genome recovered from Wallacea came from a roughly 7,300-year-old individual at Leang Panninge—far younger than the earliest crossings—illustrating both the promise of biomolecular work and the tropical preservation gap (Carlhoff et al. 2021). Submerged Pleistocene coasts, perishable craft, small founding groups, and later disturbance remove exactly the evidence most likely to bear on first days of arrival.

This does not make the framework unfalsifiable; it changes the locus of testing. The claim is not "coercion happened whenever evidence is odd." It is that certain social regimes imply explicit combinations of passenger selection, provisioning, offshore release, propulsion, timing, control transfer, and return risk. Those combinations can be simulated and compared. A coercive scenario can be rejected for a route if it cannot leave shore, cannot survive the current, requires an unattested institution, or produces a demographic structure incapable of the observed persistence. It can also be rendered unnecessary if existing drift or planned-voyage models already reproduce the relevant outcomes.

Agent-based and sensitivity models could represent departure regimes as different priors over passenger composition, provisioning, destination knowledge, control, release distance, launch timing, and return probability. The objective would not be to diagnose coercion from a single demographic anomaly, but to determine which scenario families remain viable across plausible parameter ranges.

A useful research program would therefore vary:

- random, optimized, kin-based, captive, household, and otherwise socially selected passenger groups;
- shore departure, escorted release, and deliberate release beyond a reef;
- adequate, minimal, ritual, and deliberately restricted provisioning;
- no control, intermittent low control, and experienced directional control;
- destination knowledge held by all, by one navigator, by senders only, or by no one;
- one-off events and repeated departures tied to conflict, crisis, taboo, succession, or seasonal ceremony;
- the probability and cost of return, rescue, later contact, and demographic reinforcement.

The output should not be a narrative winner. It should be a map of which causal profiles remain viable under which assumptions.

The Ethics Are Part of the Causality

Consent may sound like a modern ethical concern imported into a prehistoric technical debate. Properly defined, it is a causal variable.

If passengers choose departure, their provisions, destination beliefs, risk tolerance, group composition, and return plans can be evidence about their project. If they are forced aboard, those variables may instead reflect decisions made by senders for a different objective. A model that ignores embarkation voluntariness can attribute the passengers' later survival behavior to an original plan they never held.

Later maritime history makes the analytical danger obvious. The same vessel can carry merchants, pilgrims, soldiers, settlers, enslaved people, convicts, deportees, refugees, pressed sailors, hostages, and willing crew. Sharing a hull does not create shared intention. The captain's route is not the captive's purpose. The state's deportation policy is not the deportee's migration plan.

Nor does attention to coercion require importing a modern individualist self into deep prehistory. Persons everywhere act through obligations, kinship, cosmology, hierarchy, and collective identities. Those structures can generate sincere assent, constrained acceptance, or force. A person's internalization of a command is evidence about their relation to it, not proof that the social field contained no power. The task is not to prosecute prehistoric people under modern law. It is to avoid describing a contested act as if it had one mind.

Uncertainty must operate in both directions. The absence of writing is not evidence for the absence of coercion. It also does not license the invention of chiefs, prisons, or priesthoods. Decisions might have been household-based, temporary, collective, diffuse, or bitterly contested. Small-scale societies can coordinate punishment without possessing a state, but elaborate penal transport demands more organization than the model should assume by default.

An archaeology capable of honoring early maritime skill should also be capable of asking how that skill operated inside unequal relations.

A Research Program, Not a Recovered History

The framework changes practice by replacing one verdict with a profile. For any proposed crossing, ask:

1. Was the craft built for this event, selected from ordinary use, repaired, or damaged?
2. Who chose the cargo and departure window?
3. Could each passenger meaningfully refuse embarkation?

4. Who physically caused the launch?
5. Who controlled movement at each stage, and when did control change?
6. What did senders, navigators, and passengers each know about routes and destinations?
7. Which outcomes did each coalition desire, merely foresee, tolerate, or oppose?
8. When did a particular landfall—or any landfall—become a goal?
9. Was the passenger group random, socially selected, or demographically optimized?
10. What outcome is being explained: landfall, local persistence, repeated voyaging, or regional peopling?
11. What alternative action could the senders have taken, and why would launch serve their interests?
12. Was return intended, physically possible, politically forbidden, or strategically dangerous?

Most answers will remain "unknown." That is not a defect. Unknown is more accurate than allowing purposeful construction to fill every cell. The profile also accommodates mixed cases: voluntary navigators with compelled passengers; a consensual fishing departure followed by involuntary drift; a forced launch followed by intentional land-seeking; an initial accidental discovery followed by coordinated settlement voyages.

The framework will have succeeded if it makes fewer stories feel inevitable and more assumptions visible.

What This Does Not Claim

This essay does not claim that the first settlement of Sahul, Sulawesi, the Philippines, the Ryukyus, or any other island was founded by exiles or sacrificial victims.

It does not claim that plant-processing traces prove a particular boat design, that pelagic fish reveal one capture method in every context, or that later oral traditions are fossils of Pleistocene events.

It does not deny the growing evidence for sophisticated and deliberate seafaring. It separates that evidence from claims it cannot carry alone.

It does not assume that small-scale societies were centralized, stratified, or governed by specialized penal and ritual institutions. It distinguishes sanctions that temporary coalitions could impose from programs requiring durable authority.

It does not claim that archaeology can presently diagnose coercion at a first-settlement site. It proposes explicit candidate regimes that can be bounded, simulated, compared, and rejected.

It does not make coercion the default. Planned exploration, cumulative short-range movement, fishing voyages, exchange, escape, drift, and mixed-motive migration remain indispensable parts of the hypothesis space.

Its conclusion is narrower: deliberate maritime technology establishes capability, not unanimity. The more capable the technology, the more kinds of social action it can serve.

A rope can bind a raft together. It can also bind a passenger.

Who Intended the Voyage?

Perhaps no one intended the voyage in the form that history received it.

The builders intended a usable craft. Those directing the launch intended an absence. The passengers intended not to die. A navigator intended to keep the bow from turning broadside. Wind and current carried the vessel somewhere no one had named. Birds became a clue. Visible land became a target. A shelter became an intention to remain until morning. Later contact turned survival into persistence. Descendants made the landing look like a founding.

Archaeology encounters the far end of that chain and calls it colonization.

That word may correctly describe the demographic outcome. It should not be mistaken for a recovered plan.

The first ocean crossings remain among the great demonstrations of human ingenuity. Recognizing opposed purposes does not diminish them. It makes the people inside them more human: knowledgeable and unequal, cooperative and coercive, frightened and inventive, able to redirect an event they did not begin.

The strongest conclusion is not that a sacrificial raft founded any particular island. It is that a model comparing only accidental drift with consensual colonization would have trouble representing the event if one did.

A voyage can be deliberate without being shared.

A migration can begin as an expulsion.

The sea may preserve the fact of arrival. It does not preserve consent.

Before asking whether the voyage was intended, ask who could decide, who could refuse, and when control changed hands.

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Appendix: Transmission

(Non-Analytical Layer)

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Part of the Sum Bunny Canon (Ark Hive Press).

This work was developed with AI-assisted analysis tools. All arguments, structures, and final judgments are the author's.

Hey Josiane,

Sum Bunny Loves You!!!